

# Slating & Tiling

TIPS 99

## Flat to pitch roof junction – Eaves

While it would be ideal to have only pitched roofs on all buildings in the UK, in reality this is not possible. Where flat and pitched roofs are needed they should be separated, where possible, by a physical break of more than 150mm, like a vertical wall. But where a flat roof does meet a pitched roof the construction of both roof covering may be compromised, unless care is taken to detail the junction correctly.

### Eaves situation

Where a flat roof, parapet wall gutter, chimney back gutter, horizontal valley, or other situation, is located below a pitched roof, it is common to find the sides of the flat roof turned up the incline of the pitched roof slope for a distance of between 150 and 600mm, depending upon the situation and pitch of the slate or tiled roof.

To support the flat roofing material there should be a decking material, normally timber (plywood or OSB) boarding, ranging in thickness from 15 to 18mm depending upon the rafter spacing and material used. Above this will be the flat roofing material, ranging from three layer bitumen felt to asphalt, lead sheet or single ply membrane.

Each will have a different overall constructional thickness. In most instances the flat roof will be laid to falls and in the case of lead sheet will also be stepped between the highest point and the rain water outlet. This means that sometimes the flat roof will fall away from the pitched roof, or will fall at right angles to the rafters, making the distance up the rafters vary in the length of the fall. The overall thickness of the construction is very important as are the positions of the steps, as this will affect the coursing of the tiles or slates on the roof.

Ideally the flat roof support boards should be set between and set flush with the rafters, on noggins nailed to the side of the rafter, and finished with a 4mm Plywood sheathing over both the boarding and the rafters to provide the least thickness above the rafters and to act as an underlay support board for the pitch roof underlay just above the flat roof. A triangular timber tilt fillet should be nailed to the rafters, and ideally not less than 150mm vertically above the flat roof to the top edge of the tilt fillet, and not less than 150mm from the top edge of the boarding. The top edge of the tilt fillet should be laid horizontal and not parallel with the flat roof.

If the length of the falls on the flat roof necessitate a step in the sides of the flat roof,

the step should be at a position horizontally that is a modular width of the tile or slate roof covering, and up or down the roof slope by the tile or slate batten gauge, to ensure that where the steps occur the pitched roof covering is fully supported, and does not cause a kick in the slates or tiles.

Between the two ends of tilt fillet a linking batten should be installed to close off the end to stop birds and small rodents entering the batten space after the roof has been finished. The size of the horizontal triangular tilt fillet will depend upon the thickness of the flat roofing material, the height of the eaves vent grill (if installed), the pitch of the roof, and the type of pitched roof covering being used.

Once the tilt fillet has been installed, the flat roof covering should be laid and dressed over the tilt fillet to the top of the boarding and in the case of Lead sheet finished with a welt. The over fascia vent grill, or an underlay support board, should be installed onto the tilt fillet before the eaves course of underlay is installed.

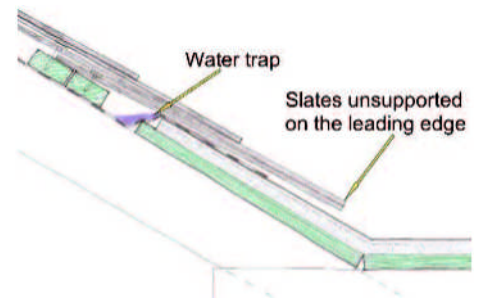
There should be no step up in the underlay from the top of the rafters to the timber tilt fillet where water on the underlay can be trapped, this is most important with plain tiles where the under eaves tile batten is located approx 100mm from the leading edge of the tilt fillet. If an over fascia vent grill is installed into the tilt fillet it will require the fixing nails to penetrate the flat roofing material, which is not ideal, but is at the least vulnerable position.

Provided the tilt fillet and flat roofing covering has been installed correctly the eaves course of tiles, or slates, should be installed without a dip or sprocket, on the eaves course. The tiles and slates should over-sail the tilt fillet by the normal 50mm and be fixed to comply with BS5534. If the fixing specification for the tiles requires that the eaves course is clipped, then again the eaves clips will need to be nailed through the flat roofing material into the timber tilt fillet. The length of the nail used should be longer than normal to accommodate the thickness of the flat roof covering material, especially with asphalt which can be up to 18mm thick. Where a lead sheet roof covering is used aluminium nails should not be used to fix the eaves clips.

Copper or stainless steel nails should be used as the lead will dissolve away the aluminium in a few years. Where there is a

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*How not to detail a flat to pitch junction. Note the water trap in the underlay because the top edge of the flat roof is not tapered. Also the leading edge of the slates are kicking up because the total thickness of the flat roof is greater than the slate batten depth*

step in the eaves course of tiles, where the eaves course of tiles needs to be clipped, the end tiles at the step will also need to be clipped using a verge clip, nailed to the tilt fillet and modified to fit.

### Conclusion

Provided the flat roofing contractor is given all the dimensions and information and talks to the pitched roofing contractor and they are in agreement regarding the size and position of the timber tilt fillets, the construction of the junction between the flat and the pitched roof should not be a problem. But if each specialist does their own thing, then the junction between the flat and the pitched roof covering may end up a poor compromise.

### Tips:

1. The specifier should draw this junction up at a scale of 1:1 and get both the flat and pitched roof installers to agree the detail early in the construction process
2. Avoid changing the specification of the roof covering as this will affect the size and position of the triangular timber tilt fillets
3. Ensure that there is no step up or back-fall in the underlay adjacent to the tilt fillet.

It's the end of an era for RCI as Slating and Tiling Tips is coming to an end. Tip 100 will be the final installment. To review any of the previous articles, visit

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